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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/670,673      | 09/27/2000  | Michael L. Honig     | 12569US01           | 5558             |

7590 11/10/2003

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| EXAMINER |
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WARE, CICELY Q

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

2634

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DATE MAILED: 11/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

S.4

**Office Action Summary**

Application No.

09/670,673

Applicant(s)

HONIG, MICHAEL L.

Examiner

Cicely Ware

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 1 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12, 13 and 17 is/are allowed.
- 6) ☒ Claim(s) 1-11, 14-16 and 18-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

1. This application has been filed with informal drawings, which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

### ***Specification***

2. The disclosure is objected to because of the following informalities:

a. Pg. 5, line 10 and line 14, applicant uses the phrase "as follows."

Examiner suggests either deleting the period or inserting a colon. Applicant makes use of this phrase through out the disclosure. Examiner suggests re-writing this phrase for clarification purposes.

b. Pg. 10, line 19, examiner suggests applicant delete this line.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. Claims 3,4,5,8,9,10,14-16,22,23 and 24 recite the limitation "the Hermitian transpose". Examiner suggests applicant use "a Hermitian transpose". There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. Claims 1-3,6,7,8,11,18-22 and 25 rejected under 35 U.S.C. 102(a) as being anticipated by Honig et al. (Adaptive Techniques for Multiuser CDMA Receivers).

(1) With regard to claim 1, Honig et al. disclose a method of filtering successive received signal samples, a group of N successive samples forming a received sample vector of digital data having a Nx1 dimension to provide an approximate desired signal comprising (pg. 51, col. 1, paragraph 1, lines 9-11): generating a set of basis vectors where each successive basis vector is a function of a given or an estimated steering vector and successively greater powers of a covariance matrix for a sequence of received sample vectors of data with the initial basis vector being from the steering vector (pg. 51, col. 2, lines 14-24, pg. 52, col. 1, lines 1-5); generating a reduced rank vector of digital data having a Dx1 dimension, where D is less than N, from a matrix of D basis vectors and a received sample vector of data (pg. 53, col. 2, lines paragraph 4, lines 1-2; pg. 54, lines 1-15); generating a Dx1 filter coefficient vector from the generated basis vectors; and generating the approximate desired signal from the filter coefficients and the reduced rank vector of data (pg. 53, col. 2, lines paragraph 4, lines 1-2; pg. 54, lines 1-15).

(2) With regard to claim 2, claim 2 inherits all the limitations of claim 1.

Furthermore Honig et al. disclose where  $D+1$  successive basis vectors are generated by multiplying an immediately preceding basis vector of data by the covariance matrix for the received sample vector (pg. 54, Fig. 4, Pg. 55, col. 1, paragraph 1, lines 1-12). *25-41*

(3) With regard to claim 3, claim 3 inherits all the limitations of claim 1. Honig et al. disclose wherein the reduced rank vector is generated by multiplying the Hermitian transpose of the matrix of basis vectors by the received sample vector of data (pg. 54, col. 1, lines 1-7).

(4) With regard to claim 6, claim 6 inherits all the limitations of claim 1. Honig et al. disclose generating the desired signal by multiplying a Hermitian transpose of the filter coefficient matrix by the reduced rank vector of data (pg. 54, col.1, lines 4-7).

(5) With regard to claim 7, claim 7 inherits all the limitations of claim 1.

(6) With regard to claim 8, claim 8 inherits all the limitations of claims 7 and 3.

(7) With regard to claim 11, claim 11 inherits all the limitations of claims 7 and 6.

(8) With regard to claim 18, claim 18 inherits all the limitations of claim 1.

(9) With regard to claim 19, claim 19 inherits all the limitations of claim 18. Honig et al. further discloses where  $D$  is selected to be less than or equal to 8 (pg. 55, col. 2, paragraph 3, lines 2-6).

(10) With regard to claim 20, claim 20 inherits all the limitations of claim 18. Furthermore Honig et al. disclose where  $D$  is selected to minimize an a posteriori Least Squares cost function (pg. 54, col. 1, lines 8-15).

(11) With regard to claim 21, claim 21 inherits all the limitations of claims 20 and  
2.

(12) With regard to claim 22, claim 22 inherits all the limitations of claims 20 and  
3.

(13) With regard to claim 25, claim 25 inherits all the limitations of claims 20 and  
6.

### ***Allowable Subject Matter***

6. Claims 4,5,9,10,14-16,23 and 24 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

7. Claims 12,13,17 are allowed.

8. The following is a statement of reasons for the indication of allowable subject matter: The instant application discloses forming a correlation vector with correlation scalars, each correlation scaler, forming a DxD correlation matrix from 2D-1 correlation scalars, generating 2D-1 correlations between pairs of basis vectors. Prior art references fail to teach this limitation of the independent claim.

### ***Conclusion***


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cicely Ware whose telephone number is 703-305-8326. The examiner can normally be reached on Monday – Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

*Cicely Ware*

cqw  
November 3, 2003



**STEPHEN CHIN**  
**SUPERVISORY PATENT EXAMINER**  
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